Improving Research Mentoring Relationships in Support of Researcher Mental Health & Work-Life Integration Post-COVID

DOE Laboratories of the Future Series

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Center for the Improvement of Mentored Experiences in Research (CIMER)

CIMER Mission
Improve the research mentoring relationships for mentees and mentors at all career stages and disciplines through the development, implementation, and study of evidence-based and culturally-responsive interventions.
Assumptions

• Mentoring is not the only factor in researcher success but it is a major determinant in the likelihood of career success & well-being.

• Mental health and well-being have challenged the research workforce long before COVID; COVID has exacerbated these issues.

• Systemic inequities and barriers have affected the career trajectories and well being of minoritized researchers long before COVID; COVID has amplified these disparities.

• My remarks and recommendations have implications for individuals, leaders and policy makers.

• DOE National Labs are diverse institutions, some operated by industrial entities others by universities and non-for-profit organizations.
Recommendations

1. Use a shared definition of mentorship

2. Leverage the research on the relationship between strong mentoring relationships and positive mentee outcomes

3. Engage in evidence-based research mentorship education

4. Access resources for further learning
Recommendation #1:
Use a Shared Definition of Mentorship
Recommendation #1: Use a shared definition of mentorship.

Mentorship is a professional, working alliance in which individuals work together over time to support the personal and professional growth, development, and success of the relational partners through the provision of career and psychosocial support.

Mentorship includes career support functions (e.g., career guidance, skill development, sponsorship) and psychosocial support functions (e.g., emotional support or role modeling) aimed at mentee talent development.

NASEM, 2019
Distinguish between mentorship and titles/roles

- Research supervisor
- Technical manager
- Formally assigned career mentor
- Peers

Anyone in any role can engage in research mentoring
Recommendation #2:

Leverage the Research on Mentorship
Mentoring Matters


• Persistence (Gloria et al, 2001; Solorzano 1993; McGee and Keller, 2007; Sambunjak et al, 2010; ; Bordes-Edgar et al., 2011; Campbell & Campbell, 1997; Hernandez et al., 2017)

• Research productivity (Steiner and Lanphear, 2002; 2007; Wingard et al, 2004)
Mentoring Matters

• **Higher career satisfaction** (Schapira *et al.*, 1992; Beech *et al.*, 2013; Dandar, Field & Garrison, 2017; Zimmerman *et al.* 2020)

• **Mentee mental health and well-being** (good mentorship as a protective factor) (National Academies of Sciences, Engineering, and Medicine. 2021.)
Attributes of Effective Mentoring Relationships

RESEARCH SKILLS
- Guide mastery of research skills
- Guide acquisition of knowledge
- Accurately assess if mentees’ understand disciplinary knowledge and skills
- Valuing and practicing ethical behavior and responsible conduct of research

DIVERSITY/CULTURALLY-FOCUSED SKILLS
- Advancing equity and inclusion
- Being culturally responsive
- Reducing the impact of bias
- Reducing the impact of stereotype threat

INTERPERSONAL SKILLS
- Listening actively
- Aligning mentor and mentee expectations
- Building trusting relationships/honesty

SPONSORSHIP SKILLS
- Fostering mentees’ independence
- Promoting professional development
- Establishing and fostering mentee professional networks
- Actively advocating on behalf of mentees

PSYCHOSOCIAL SKILLS
- Providing motivation
- Developing mentee career self-efficacy
- Developing mentee research self-efficacy
- Developing science identity
- Developing a sense of belonging

ALIGNED WITH DEVELOPMENTAL STAGE
- Knowing when to support and when to challenge
- Anticipating change over time
- Evolving the relationship

Pfund et al. 2016
Mentoring Quality & Well-Being

• Good mentorship practices (in general) serve as a protective factor for researcher mental health (NASEM, 2020)
  • Enacting aforementioned attributes will be beneficial in general

• Research mentors can engage in practices that have been shown to directly attend to mental well-being of researchers:
  • Recognize issues and warning signs
  • Empathize
  • Make referrals
Effective Mentorship is a Learned Skill

Training Mentors of Clinical and Translational Research Scholars: A Randomized Controlled Trial

Christine Pfund, PhD, Stephanie C. House, MA, Pamela Asquith, PhD, Michael F. Fleming, MD, Kevin A. Buhr, PhD, Ellen L. Burnham, MD, MSc, Julie M. Eichenberger Gilmore, PhD, W. Charles Huskinds, MD, MSc, Richard McGee, PhD, Kathryn Schurr, MS, Eugene D. Shapiro, MD, Kimberly C. Spencer, and Christine A. Sorkness, PharmD
Figure 2 Comparisons by group of mean Mentoring Competency Assessment composite score self-assessed by mentors, with changes shown from pretest (“Pre”) to posttest (“Post”) and from retrospective pretest (“Retro-pre”) to posttest (“Post”). Group means with 95% confidence intervals are shown. $P$ values test for group difference in the indicated change.
Figure 4 Comparisons by group of mean Mentoring Competency Assessment composite score assessed by mentees with changes shown from pretest (“Pre”) to posttest (“Post”) and from retrospective pretest (“Retro-pre”) to posttest (“Post”). Group means with 95% confidence intervals are shown. $P$ values test for group difference in the indicated change.
Recognizing and responding to cultural identities contributes to mentorship effectiveness

- Mentoring addressing cultural diversity matters and psychosocial needs of diverse students is positively correlated with their science identity, commitment to a research career, and satisfaction with a research career (Fresquez & Haeger, 2016)

- Mentorship can ameliorate negative effects of students’ feelings of being “othered” due to their non-science identities in STEMM by increasing inclusion and psychosocial support
Recommendation #3: Engage in Evidence-Based Mentorship Education
Engage in evidence-based research mentorship education

- Evidence-based approach developed by scholars and thought leaders at the University of Wisconsin
- Standardized competencies and validated assessments

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The role of mentors in addressing issues of work–life integration in an academic research environment

Dennis R. Durbin, Stephanie C. House, Emma A. Meagher, and Jenna Griebel Rogers
Engage in evidence-based research mentorship education (continued)

- Adapted for different career stages (mentors of faculty, graduate students, postdocs, undergraduates)
- Adapted for different disciplines and institutional types
- Developed over the last decade with funding from National Science Foundation, Howard Hughes Medical Institute, National Institutes of Health
- All open access
Recommendation #4: Access Resources for Future Learning
IGEN Goals:

○ Increase the fraction of students from underrepresented groups who complete physical science doctoral degrees

○ Catalyze the adoption of evidence-based inclusive practices in graduate education

○ Establish sustained, cross-sector partnerships that support the advancement of underrepresented students

Mentorship Training Curriculum Project Goal. To adapt an existing evidence-based mentor training curriculum primarily focused on mentorship in the university context to one that is salient to the National Laboratory context

Project History. In Fall 2019 we gathered the directors of postdoctoral offices from across (primarily) department of energy national laboratories to describe the project aims. As a result of that meeting, four individuals from three laboratories volunteered to join a development team.
Mentorship Education for Scientists at Federally-Funded Research Centers
(National Laboratories)

Part of the
W.H. Freeman Entering Mentoring Series
CIMER: Providing resources for organizations and institutions to improve research mentoring relationships

Christine Pfund, Janet L. Branchaw, Melissa McDaniels, Angela Byars-Winston, Steven P. Lee, and Bruce Birren
Derek Braun, Monitoring Editor

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- Plan in-person interactions
- Reassess goals
- Realign Expectations
- Identify short, medium and long term goals
- Attend to psychosocial needs
- Lead by example
Where can you learn more?

Read the Report
www.nap.edu/MentorshipInSTEMM

Use the Online Guide
www.nationalacademies.org/MentorshipInSTEMM

Learn about the Project
www.nas.edu/mentoring

Join the Conversation
#NASEMmentoring

Ask a Question or Make a Comment
mentoring@nas.edu
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Resources & Workshop Documents

Further Interest Form
- Please fill out this form if you want to learn more about mentorship education in the National Labs
  https://forms.gle/42xQKjiVB8Ew79fd8

Resources shared in workshop:
- National Academies Report on Mentorship
  - Full Report: www.nap.edu/MentorshipInSTEMM
  - Online Guide: www.nap.edu/MentorshipInSTEMM